

WHAT IS CLAIMED IS:

1. A front-end module for multi-band and multi-mode wireless network system, connecting two antennas, comprising:

two diplexers each comprising at least a high pass filter and a first low pass filter;
a diversity switch connecting one of the diplexers with one of the antennas;
two band pass filters connecting one of the diplexers;
two baluns one-on-one connecting the band pass filters; and
two second low pass filters connecting the other of the diplexers.

2. The front-end module set forth according to claim 1, wherein the diplexers, the band pass filters, the baluns, and the second low pass filters are formed in a plurality of low temperature cofired ceramic substrates by patterning, and the diversity switch is disposed on a surface layer of the low temperature cofired ceramic substrates.

3. The front-end module set forth according to claim 2, wherein there are a plurality of conductive layers and a plurality of dielectric layers in the low temperature cofired ceramic substrates, and there are via holes between the conductive layers.

4. The front-end module set forth according to claim 3, wherein the diplexers, the band pass filters, the baluns, and the second low pass filters each comprises a plurality of capacitor and a plurality of inductances and all are formed on the conductive layers by patterning.

5. The front-end module set forth according to claim 4, wherein the capacitors are patterned to have block configuration, and the inductances are patterned to have strip configuration.

6. The front-end module set forth according to claim 4, wherein the capacitors

and the inductances are connected to the surface layer of the low temperature cofired ceramic substrates through the via holes between the conductive layers.

7. The front-end module set forth according to claim 2, the diversity switch comprises a GaAs switch and its subordinate passive elements.

8. The font-end module set forth according to claim 7, the GaAs switch and its subordinate passive elements are mounted on the surface layer of the low temperature cofired ceramic substrate by surface mounting technology.

9. The front-end module set forth according to claim 2, wherein the surface layer is provided with IC element.

10. The front-end module set forth according to claim 1, wherein each of the baluns connects two receiving terminals, and each of the second low pass filters connects one transmitting terminal.

11. A front-end module for multi-band and multi-mode wireless network system, connecting two antennas, comprising:

two channel-separating devices each comprising at least a high pass filter and a first low pass filter;

a diversity switch connecting one of the channel-separating devices with one of the antennas;

a plurality of band pass filters connecting to one of the channel-separating devices with the number of the band pass filters equivalent to the number of the channels for carrying a radio frequency signal;

a plurality of baluns one-on-one connecting to the band pass filters with the number of the baluns equivalent to the number of the channels for carrying a radio

frequency signal; and

a plurality of second low pass filters connecting to the other of the channel-separating devices with the number of the second low pass filters equivalent to the number of the channels for carrying a radio frequency signal.

12. The front-end module set forth according to claim 11, wherein the channel-separating devices are multiplexers.

13. The front-end module set forth according to claim 11, wherein the channel separating elements, the band pass filters, the baluns and the second low pass filters are formed in a plurality of low temperature cofired ceramic substrates by patterning, and the diversity switch is disposed on a surface layer of the low temperature cofired ceramic substrates.

14. The front-end module set forth according to claim 13, wherein there are a plurality of conductive layers and a plurality of dielectric layers inside the low temperature cofired ceramic substrates, and there are via holes between the conductive layers.

15. The front-end module set forth according to claim 14, wherein the channel separating devices, the band pass filters, the baluns, and the second low pass filters each comprises a plurality of capacitors and a plurality of inductances, and all are formed in the conductive layers by patterning.

16. The front-end module set forth according to claim 15, wherein the capacitors are formed to have block patterns while the inductances are formed to have stripe patterns.

17. The front-end module set forth according to claim 15, wherein the capacitors and the inductances are connected to the surface layer of the low temperature cofired ceramic substrates through the via holes between the conductive layers.

18. The front-end module set forth according to claim 13, the diversity switch comprises a GaAs switch and its subordinate passive elements.

19. The front-end module set forth according to claim 18, wherein the GaAs switch and its subordinate passive element are mounted on the surface layer of the low temperature cofired ceramic substrate by surface mounting technology.

20. The front-end module set forth according to claim 13, wherein the surface layer is provided with IC element.

21. The front-end module set forth according to claim 11, wherein each of the baluns connects two receiving terminals, and each of the second low pass filters connects one transmitting terminal.